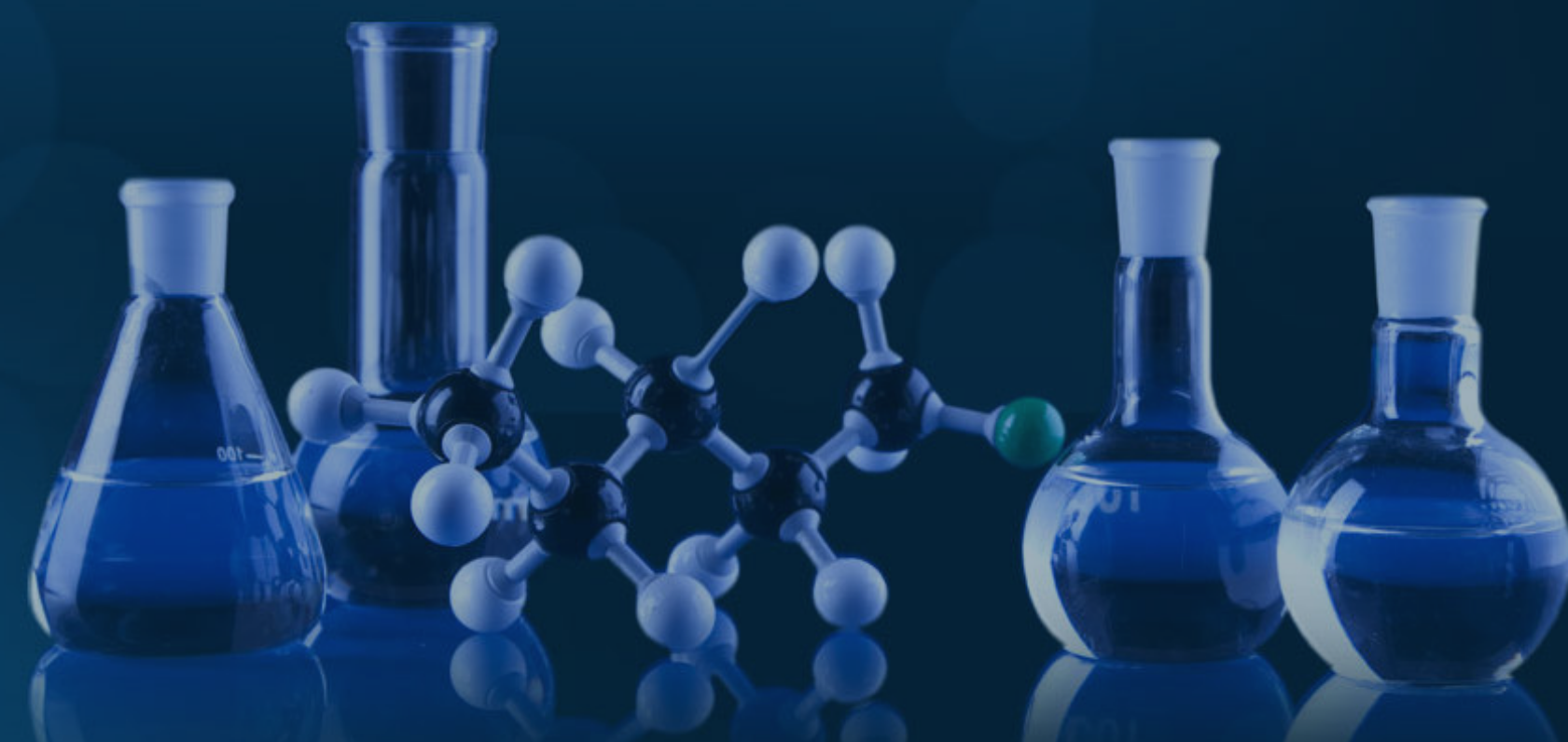




## ARL is an Authority on Nutrition and the Science of Balancing Body Chemistry Through Hair Tissue Mineral Analysis!

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# Calcium Shell

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## Calcium Shell

An important and common pattern on hair mineral analyses is a very high calcium level. When the hair calcium level is above or close to 100 mg%, it is called a calcium shell. Let us explore what this means.

### Slow Oxidation

A very high hair calcium level is almost always part of a larger pattern with high magnesium and low sodium and potassium levels. This pattern is called slow oxidation. Biochemically, it indicates sluggish adrenal and thyroid glandular activity.

It may also indicate that a person is pushing him or herself, causing adrenal depletion. This pattern is associated with a tendency for fatigue, apathy, depression, joint stiffness, low blood sugar, constipation, dry skin and hair and a low gastric hydrochloric acid level. It is also associated with impaired cell permeability, as calcium helps stabilize cell membranes.

### Why High Hair Calcium?

A very high calcium level may be a transient phenomenon that disappears on a retest hair analysis. When the pattern is persistent, it usually reflects the deposition of calcium into the soft tissues such as the hair. That is, it indicates a loss of calcium into the hair. It does not indicate an excess of calcium in the body.

The cause for calcium deposition is usually related to low sodium and potassium levels and possibly a magnesium imbalance. These imbalances prevent calcium from remaining in an ionized form in the blood. This in turn causes calcium to precipitate into the soft tissues. This is akin to calcium deposits on faucets in areas with hard water. Water softeners solve the problem by adding sodium or potassium to the tap water. These minerals solubilize calcium.

Similarly, correcting a high hair calcium level involves increasing the sodium and potassium levels in the tissues. This requires improving adrenal gland activity and increasing the metabolic rate. This raises the aldosterone level, which retains more sodium and potassium in the body. Also, improving cellular energy production enhances the activity of the sodium pump mechanism, which also keeps the electrolytes in balance.

### Biounavailable Calcium

When calcium and magnesium levels are elevated, often a portion of the reading represents biologically unavailable minerals. Calcium and magnesium are present, but unusable by the body. This can cause a peculiar mix of symptoms of both excess and deficiency at the same time. For instance, one can experience calcium deposition in joints or arteries, yet also suffer from muscle cramps, spasms, irritability or insomnia due to a deficiency of available calcium.

For this reason and because high calcium and magnesium levels represent a loss into the tissues, calcium and magnesium supplements are recommended when a calcium shell pattern is present. They provide available calcium and magnesium until balanced chemistry can be restored.

### Psychological Withdrawal

A very high hair calcium level may be due to, or involved with a tendency for psychological withdrawal, defensiveness, or a protective stance - hence the term calcium shell. Calcium has a calming or numbing effect on nervous system activity. It raises the voltage at which nerve cells fire. Therefore, a high tissue calcium diminishes the sensitivity and reactivity of the nervous system.

On the positive side, this reduces the effects of stress on the body. On the negative side, it can cause fatigue, apathy, depression, detachment, withdrawal and impair one's ability to express emotions.

Possible psychological reasons for the shell are:

- one is overwhelmed by stress
- one does not handle stress adequately
- one may be very sensitive, or for some other reason feels the need for protection against stress.

Note that the shell not only protects or numbs one to external stress, it also inhibits expression. A calcium shell may result from a fear of expression, such as a fear of speaking out, of taking responsibility, of what people may say or do, or of becoming angry or upset if one speaks up. If the cause of the calcium shell is psychological, correction of the mental or emotional aspects may be critical for the correction of the mineral pattern.

We suggest using whatever healing modalities as needed to strengthen, balance and harmonize the body. Repeat hair analyses are an excellent way to monitor progress.

### Copper Toxicity

There is a close relationship between high hair calcium and elevated tissue copper. This may be revealed on the mineral analysis, or it may be normal or even low hair copper may occur because copper may accumulate in the liver or brain, but not in the hair. Some symptoms of a calcium shell are due to copper imbalance. These may include fatigue, depression, enhanced emotions, skin problems, spaciness, insomnia, or mind racing - and occasionally hyperthyroid symptoms.

In the latter, although the hair test reveals slow oxidation, serum thyroxine levels may be elevated. Usually the patient demonstrates only some of the symptoms of hyperthyroidism. This is because the excessive thyroid activity is secondary, due to a copper imbalance or to other factors.

### Correction

Correcting a calcium shell involves correction of slow oxidation, support of adrenal and thyroid glandular activity, correction of copper imbalance and correction of any other contributing causes.

Emotional support and learning new coping mechanisms can be of great importance to correct a calcium shell. Sometimes one needs to learn how to detach from stress through techniques such as meditation. Some clients need to learn self-love, confidence in themselves, courage and healthy ways to express themselves.

A healthful lifestyle is also most helpful for those with a calcium shell. Plenty of sleep and rest are important. One's occupation and relationships need to be nurturing and health-promoting. Gentle exercise is helpful. Excessive exercise is usually harmful. Positive and inspiring friends, relationships, books and thoughts are very helpful to help bring sensitive people out of their shell so their full brightness and loveliness can shine into the world.

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